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A Framework for Understanding the Motivations for Inter-Organisational Systems Adoption: an empirical assessment

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Abstract

The adoption of inter-organisational systems (IOS) has been reported to be slow in the industry. The slow diffusion of IOS has attracted considerable research attention. However, little has been done to address why organisations adopt these systems. We argue that IOS adoption is contingent upon how the motivations for adoption arise in organisations. We also suggest that the activities initiated by organisations to introduce IOS successfully are related to the organisation's motivations for IOS adoption. To this end, a model of motivations for IOS adoption is proposed and some empirical evidence drawn from four case studies is presented. The findings indicate that the logical deductions drawn from the model in broad terms are consistent with the actual IOS adoption experiences of the case organisations.

Keywords

Inter-organisational systems, motivation, IOS adoption, case study

INTRODUCTION

The term "Inter-organisational system" (IOS) describes a distinctive type of information system (IS) that crosses organisational boundaries (Malone *et al.*, 1989). These systems have the potential to enhance organisational efficiency and to create competitive advantages (Johnston and Vitale, 1988). The potential of IOS can only be achieved if a greater number of organisations adopt IOS, as it will not be necessary for organisations to maintain parallel manual systems to transact with non-IOS capable business partners. However, despite the potential benefits, the diffusion of IOS is disappointingly slow (Hendon *et al.*, 1998). A major barrier for IOS adoption is the lack of motivation of organisations to take up the IOS technology (Parker, 1997). Owing to the importance of high adoption levels, motivational aspects of organisations to embrace IOS need to be investigated. However, there has been little research in this area. In order to address this research gap, we propose an IOS motivation framework that identifies four generic types of IOS adopters and relates them to the activities that are likely to be initiated by each type of adopter. This framework has been developed in the context of symbiotic IOS (Swatman *et al.*, 1994) and has been evaluated using case data obtained from four organisations. This paper presents this framework and the results of the case studies.

DEFINITION OF ESSENTIAL TERMS

From the linguistic perspective, the word *motivation* is derived from the term *motive* which is a major field of interest in the psychology discipline. Psychologists define motives as *the stimuli, instincts or drives that are inherent in individual to do a thing* (Brown, 1961; Maehr and Braskamp, 1986). Using this notion, we have defined the term *motivation as the stimuli that create an inspiration or intention in an organisation to embrace IOS technologies*. We believe that these stimuli may originate within an organisation or may emerge from external sources. Furthermore, in the context of IOS, we suggest that these stimuli may develop in response to a range of desires such as to improve organisational performance, establishing an image, offering better service, and satisfying the needs of business partners among others. We further suggest that even though motivation helps in shaping organisational intention or aspiration to adopt IOS, the actual adoption decision may be influenced by one or more critical criteria that managers may consider. These criteria are often known as critical success factors (CSF). Managers consider the impact of critical success factors only

when an organisation has been motivated enough to consider IOS adoption. Our view is consistent with the opinions of Mitropoulos and Tatum (2000), who recognised that adoption is influenced by success factors, but it is the adoption forces that shape an organisation's intention to adopt IOS technologies. Our view of motivation is somewhat analogous to what they regarded as adoption forces.

MOTIVATION OF IOS ADOPTION: A FRAMEWORK

Existing literature on the adoption of innovation, technology, and information technology (IT) indicates the presence of a range of reasons that motivate organisations to adopt a technology. While some writings on IOS adoption report that the motivation to embrace IOS technology may originate within an organisation, others indicate that motivations arise from external sources. In this paper, we introduce the notions of *type of motivation* and *locus of motivation*. The term *type of motivation* refers to the kinds of reasons that inspire an organisation to embrace IOS, and the term *locus of motivation* is used to indicate whether the source of motivation to adopt IOS is internal or external to an organisation. We argue that both these notions need to be considered when investigating IOS adoption in organisations, as unlike traditional IS applications the decision to adopt these systems is a function of the environment prevailing within and beyond organisations and that IOS often serve different possible goals. In this paper, two types of motivations: techno-economic and socio-political are proposed. The theoretical positions that were drawn upon to classify type of motivation into these two broad categories are summarised in Table 1. For further details please refer to Rahim *et al.* (2001).

Theoretical position	Key concept	Relevant literature
Technological determinism (Campbell, 1996)	Superior characteristics of a technology attracts its adoption.	Technology adoption, DOI
Economic determinism (Toffler, 1980)	Potential of economic gains from a technology drives its adoption.	DOI, technology adoption, IT adoption, Economics of technology
Mimicking technology adoption (Simon, 1965)	Organisations tend to mimic technology adoption decision of other successful companies.	Technology adoption
Institutionalised norms (Galaskiewicz and Wasserman, 1989)	Institutionalised values and beliefs may encourage adoption of a technology in organisations.	Technology adoption
Cultural expectations and resource dependence (Pfeffer and Salancik, 1978)	Cultural expectations of society and power of influential organisations may affect adoption of a technology in other organisations.	Organisational behaviour, Technology adoption

Table 1: Key attributes of theoretical positions on types of motivations

In general, the techno-economic motivation posits that without superior technical features in place, potential adopters are unlikely to perceive a new technology's relative advantage over rival technologies. Socio-political motivation, on the other hand, acknowledges that some organisations adopt technologies for symbolic reasons of legitimacy (Coser *et al.*, 1982), compliance with external demand (King *et al.*, 1994), or an opportunity to enhance their image (Mohr, 1987). We also propose two different sources of locus of motivation: internal and external. The theoretical justifications to arrive at these two types of loci can also be found in Rahim *et al.* (2001). We argue that organisations in which the locus of motivation is internal, motivations usually derive from champions. These are the organisations that invest in IOS voluntarily and are usually the leaders of IOS adoption in their industry. In contrast, for organisations where the locus of motivation is external, the motivation to adopt IOS comes from business partners, government agencies, industry associations among others. Moreover, these organisations generally do not build any IOS, but embrace a standard IOS. Thus, these two notions when combined yield four different generic types of motivation scenarios for IOS adoption. These scenarios are shown in Figure 1. We argue that the activities associated with IOS introduction are likely to differ among these four scenarios. Descriptions of these activities can be found in the IOS/ EDI literature (see, for example, Monczka and Carter (1988), Holland *et al.* (1992), Kalakota and Whinston (1996) and

Swatman *et al.* (1994)). Table 2 shows how these activities are associated with each scenario, and in the following sub-sections, a brief description of each generic adoption scenario follows.

		Locus of Motivation	
		Internal Initiation	External Initiation
Type of Motivation	<i>Socio-political Motivation</i>	Cell II Socio-Political Leader	Cell IV Socio-Political Follower
	<i>Techno-economic Motivation</i>	Cell I Rational Leader	Cell III Active Follower

Figure 1: A Framework for IOS Adoption Motivations

Rational Leader

Cell I defines the “Rational Leader” scenario. This scenario takes place when an IOS initiator is motivated by the techno-economic perspective, and makes an investment in IOS voluntarily believing that the investment will improve organisational performance with regard to internal efficiency and competition in the marketplace. We argue that rational leaders will approach IOS adoption in a planned manner. As these leaders are driven by IT initiatives, they will identify the unique properties of IOS technology, and will also evaluate the economic potential of IOS before deciding to invest on IOS technology. These leaders will prepare a rigorous plan to build and introduce IOS. They will recognise that integration of IOS with back-end systems is important to attain economic benefits. They may even introduce IOS as part of a larger business practice improvement project. Rational leaders will also perform post-implementation evaluation of the IOS upon operationalising IOS. They will determine the extent to which the benefits have been attained. These leaders understand the significance of training people to develop and introduce IOS. Additionally, rational leaders are likely to adopt a proactive approach and to market IOS concept aggressively.

Socio-political Leader

Cell II defines the “Socio-Political Leader” scenario that occurs when an IOS initiator is inspired by socio-political motivations, and implements an IOS for reasons other than efficiency gains but nevertheless with a clear intention of perhaps portraying a “progressive” image in the industry, or with the realisation that there is no other way forward given its trading partner’s IOS adoption strategies. However, the motivation to adopt IOS is initiated internally. We argue that socio-political leaders will also approach IOS adoption in a systematic manner. They will analyse IOS opportunity in terms of attaining their socio-political goals, hence they are unlikely to evaluate the economic aspects of IOS before deciding to invest on IOS technology. These leaders will prepare an implementation plan to introduce IOS. They will also integrate IOS into their business practices, but due to a lack of drive to use IOS for economic gains, these organisations will be reluctant to disrupt their business practices. These leaders are unlikely to perform any post-implementation evaluation of IOS. It is because the aim of introducing IOS is not to gain financial benefits, but to establish socio-political objectives. They appreciate the value of training people to develop and introduce IOS. These leaders are more likely to put pressure on their trading partners to join in their IOS networks, as lack of enthusiasm on the part of their partners to embrace IOS may jeopardise their aim to attain socio-political ambitions.

Active Follower

Cell III refers to the “Active Follower” scenario. This applies when an organisation is approached by other organisations about IOS adoption and having evaluated the potential benefits of the IOS, invests voluntarily in IOS. Although the motivation to adopt IOS is generated from external sources, the decision is made based on techno-economic reasons. We argue that the activities initiated by active followers with regard to IOS adoption will be in many respects similar to those of rational leaders. However, the degree of rigour is likely to be low, because active followers have less cost involvement in developing IOS as compared to rational leaders. Active followers will adopt a systematic approach to introduce IOS within their organisations. As these organisations want to reap the economic gains by exploiting the technical novelty of IOS, they will evaluate the economic and technical aspects associated with IOS adoption before deciding to embrace IOS technologies. They will also prepare an implementation plan and will integrate IOS with their back-end systems. Active followers are also likely to assess the impact of IOS after its introduction. They will attempt to incorporate changes into their business practice to maximise their financial benefits. Active followers will train their employees to work with IOS. These organisations may capitalise IOS technology to derive strategic benefits.

Socio-political Follower

Cell IV represents the “Socio-Political Follower” scenario which arises when an organisation is approached by other organisations to adopt an IOS. There is no economic analysis conducted for the IOS adoption. The decision is initiated externally for reasons of legitimacy, compliance, influence or social status. We argue that socio-political followers will not be addressing a defined organisational efficiency problem, but will attempt to relieve the stresses caused by the external influence. Consequently, there is little emphasis to conduct systematic evaluation of IOS. They will invest a minimum of resources on IOS to secure a satisfying response from the external source that caused the initiation. This is likely to result in a superficial incorporation of technology in their business practices. This means that socio-political followers will not integrate IOS with their back-end systems, and as such they are unlikely to experience an improvement in their internal process. Once IOS has been operational, the socio-political followers are unlikely to perform any post-implementation evaluation of IOS. However, these organisations understand the significance of training people to introduce IOS. Furthermore, these followers generally lack the business expertise necessary to use IOS strategically.

Motivation Scenarios of IOS Adoption				
Rational Leader	Socio-political leader	Active follower	Socio-political follower	Activities
Likely to	-	Likely to	-	Evaluates the potential of IOS
Likely to	Likely to	Likely to	Likely to	Prepares IOS implementation plan
Likely to	Likely to	Likely to	-	Integrates IOS with back-end systems
Likely to	-	Likely to	-	Performs post-implementation assessment of IOS
Likely to	Likely to	Likely to	Likely to	Trains staff on IOS
Likely to	-	Likely to	-	Introduces changes in the business process
-	Likely to	-	-	Applies pressure on partners
Likely to	Likely to	-	-	Markets IOS concept

Table 2: Propositions drawn from the IOS motivation framework

RESEARCH APPROACH

We have adopted a case study approach to study IOS adoption. As this study is concerned with the development and refinement of theory to understand IOS adoption, case study method was regarded appropriate (Yin, 1994). An interview protocol was developed based on the proposed model. Data for the case studies was collected using semi-structured

interviews and examination of IOS related documents, company annual reports and websites. Each interview lasted for an hour, was tape-recorded and subsequently transcribed in full. A coding scheme was developed based on the IOS motivation model and activities listed in Table 2. Using this coding scheme, each interview script was coded by the first author and by another individual who was not a part of the research team. Any differences were resolved through mutual discussions. Reliability and validity issues were addressed using the methodological guidelines stated in the literature (Yin, 1994; Lee, 1989). Construct validity was judged by arranging formal interviews with several respondents from each company. Information was also collected through informal modes of interaction such as email, documentary evidence, telephonic conversations etc. Additionally, interviewees reviewed a written copy of their interview transcript. They also checked case summaries. Reliability was evaluated by developing an evolving set of interview protocols, literature reviews, proposals etc. as well as by maintaining case study notes.

The unit of analysis is a single organisation as we have adopted the simplifying assumption that for any particular organisation, the rest of the supply chain can be considered as a part of the environment. This assumption is valid because in this study we have looked at a single organisation at a single point in time. As the unit of analysis is a single organisation, one key informant from each organisation was chosen to represent that organisation's official view of IOS motivation.

CASE STUDIES

In the following sections, we present IOS adoption experiences of four case organisations. In doing so, we describe the type and locus of motivation and explain how these case organisations initiated different activities to introduce IOS in their respective organisations.

Wholesaler: The Case of a Rational Leader

This company is involved in the wholesale distribution of pharmaceutical products to the hospital market. In early 1990, the company introduced an electronic order entry system. This system that we will call the 'ABC' system, allows customers to log into the company's ERP system and enables them to place orders. The company had a Canadian-based software that had a provision to allow remote data entry. Its presence helped the IT manager in conceiving the initial idea of the ABC system. The company invested on the ABC system to reduce manpower cost associated with order data entry process, and to eliminate data entry errors. The company also sought a competitive advantage by enabling its customers to order electronically.

A committee was established that included the head of the IT department and a senior pharmaceutical service manager. The committee assessed the technical and economic feasibility of developing the ABC system, and recommended its implementation to the top management. The committee also prepared a project plan and proposed a budget. An evaluation of the ABC system was performed several years after it was implemented. The company identified those features that its customers still wanted to use. The ABC system was initially linked to the company's back-end system developed in house. After introducing the ERP software, the company again established an interface with the ABC system. The ABC system was promoted aggressively to the customers. Sales people were dispatched to the customers to explain the potential benefits of the ABC system. The company even offered the ABC system free to all its customers. The company did not apply any form of coercive influence on its customers to accept the ABC system. Although the company was prepared to bear necessary training expenses for the IT people in implementing the ABC system, no training was required. The company however trained its IT people in ERP implementation, and that training helped them to establish an interface between the ABC system and ERP system.

The ABC system has helped the company to introduce a Just-in-time (JIT) service in one particular hospital. The company also co-operated with the vendors of the hospital pharmacy software to establish an electronic link between the ABC system and hospital's back-end pharmacy system. The adoption of the ABC system yielded substantial benefits to the company. Errors arising from a manual data entry process were reduced and less

paperwork was required. The company did not employ any extra order entry people to cope with the increasing volume of orders.

Manufacturing Company 1: The Case of a Socio-Political Leader

This company produces blood, renal and intravenous therapies that are used in patient treatment. The vision of the company is: *"To be recognised as one of the most admired companies in the world"*. In mid-2000, an Internet-based EDI system was developed to transact with customers. The initiative to introduce EDI originated within the company. It was successfully running Portable Data Transfer (PDT) devices at some hospitals for some time and was contemplating what to do next. The wide publicity of e-Commerce in 1999 created awareness among management and IT people of the company. At the same time, the company was implementing ERP software that had an option for an EDI module. Thus, there was a good opportunity for the company to initiate e-Commerce in conjunction with ERP. The principal reason for the company to embrace EDI was to demonstrate a *"customer caring kind of image to the hospitals"*. This objective is in line with the company's vision.

The company did not perform a formal evaluation on EDI as it sensed frustration among hospitals. Its customers did not see e-Commerce moving in hospitals, though government had been advocating e-Commerce in the public health sector for some time. The company thought if it proposed an e-Commerce solution customers would respond favourably, and hence it decided not to spend much time in analysing cost-benefit of EDI. The company also did not evaluate the impact of EDI once it was implemented. There was a specific project plan for introducing EDI in the company. A project team comprising three members was formed whose responsibility was to look for ways to do e-Commerce with customers. This team identified that the ERP system that the company introduced had a capability of doing EDI file transfer, and as such the company acquired an EDI module and set up that module. The company did not want to re-key purchase orders once they were received electronically. Hence, an interface was built between its NT windows system and the ERP system. The company however did not make any changes in their order processing system. The team responsible for introducing EDI received training on EDI and ERP.

Several strategies were formulated to facilitate the customers' acceptance of EDI. Firstly, the company consulted customers to determine the nature of e-Commerce that customers would prefer to use. Secondly, the company developed an EDI system based on open standards. This was done in response to the feedback received from the customers. Thirdly, in order to entice customers to accept its EDI solution the company gave money to a software company to develop an interface between hospitals' pharmacy system and the exchange gateway. At the moment, e-Commerce accounts for 11.3% of its business and it is expected to reach 20% by the end of 2003. The delivery time of their products to hospitals remained the same. There was also no reduction in their inventory holdings.

Hospital: The Case of an Active Follower

This organisation is a large public hospital that provides a range of services to the community in a provincial city. The pharmacy department has been using a proprietary electronic ordering system since the early 1990s. This system, which we call the XYZ system, has links with its back-end pharmacy system (known as Stocca) and allows the pharmacy department to transmit orders electronically to a particular supplier. XYZ is a proprietary product of that supplier. The Director of the pharmacy department received a request from the supplier to adopt the XYZ system. Prior to that, the hospital used to key an order into its Stocca system, print that order out and then phone it to the supplier. It was a very tedious task and there was a potential to misinterpret orders by the supplier. Hence, the director could foresee the opportunity of eliminating time consuming order entry tasks. Furthermore, XYZ had the ability to interact with the supplier's computer system on a real time basis. The director recognised the potential to find out if a product is out of stock before placing an order. This useful feature of XYZ impressed the director who then decided to adopt the system without any hesitation.

The hospital did not perform a formal evaluation before deciding to adopt the XYZ system. There were two reasons for this. Firstly, the supplier gave the XYZ system free to the hospital. Secondly, the director saw little risk in using the XYZ system because the order

information was transmitted through a dedicated communication line. An informal plan was prepared to implement the XYZ system in the hospital. The department consulted the supplier and determined the hardware and software requirements. The pharmacy department did not evaluate the impact of the XYZ system once it was implemented, because there was no need to make a 'business case' for the XYZ system and present that case to the hospital management for continuous financial support.

There was formal training about the XYZ system. It was organised by the pharmacy department and provided free by the supplier. The hospital did not implement just-in-time (JIT) practices although they had thought about it once the XYZ system was successfully up and running. At the initial stage, there was no interface between Stocca and the XYZ system that caused double handling of order data and increased workload. Realising this, the hospital negotiated with the software vendor of Stocca to build an interface with SOS, and asked the supplier to cooperate with the software vendor. In response, the supplier provided all the necessary technical information free to the software vendor. The hospital is now convinced that it has definitely achieved savings although such savings were not quantified. The purchase orders now contain almost no errors and less paper work is required. Since implementing the XYZ system stock turns have increased from 7 to 12.

Manufacturing Company 2: The Case of a Socio-Political Follower

This pharmaceutical manufacturing company produces biologically based health care products for human use. It has been using an EDI system to transact electronically with one of its key customers (a large wholesaler). The idea of establishing an EDI system was not conceived within the pharmaceutical company. Five years prior to establishing the EDI system, the distribution manager of this company received a request from the wholesaler to establish an EDI system. The distribution manager in turn asked the IT department to find and introduce a suitable EDI solution. Eventually, the company acquired a PC-based standalone EDI system. The reason for adopting EDI was basically to enable the wholesaler to send EDI orders to the pharmaceutical company. The company expected that its compliance with the wholesaler's request would make the wholesaler happy.

The company did not perform a rigorous evaluation on EDI before deciding to implement it. In an informal meeting, it agreed to adopt EDI and decided to invest a minimum amount on EDI because due to the low number of transactions with the wholesaler, the company did not expect to improve the efficiency of its order receipt process. There was a project proposal in which the company outlined a budget and timeframe to implement the EDI system. Furthermore, the company did not consider it important to measure the impact of EDI upon its implementation because it had no benefit expectations from EDI. The sole purpose was to make the wholesaler happy.

As the company has been using a standalone EDI system, once the purchase orders are received via EDI, they are then typed in manually by customer services people and then fed back into the company's back-end IS. As the company implemented a simple standalone EDI system, its IT people did not require any special training, and had the requisite skills to implement the EDI system. However, training was provided to the customer services people on how to use the system. The adoption of EDI in the company did not lead to any major changes in its business practices. The company however believed that business changes were only feasible if EDI was integrated with its internal information system. The company acknowledged that the wholesaler was definitely very happy with its EDI adoption. EDI was regarded as success as it helped the company to improve its relationship with the wholesaler.

Even though there was no inventory savings as a result of EDI adoption, the company acknowledged that a reduction in inventory can only be achieved if EDI is used into its planning activities. However, at the moment, the wholesaler is not very keen to share their inventory status and forecasting information with the company, and nobody from the company took any initiative to persuade the wholesaler to share such information. The company did not experience a reduction in manpower or paper work.

DISCUSSION

In terms of the IOS motivation model (Figure 1), the participating wholesaling company can be categorised as a rational leader. The idea of developing a proprietary electronic ordering system was conceived by an IT manager in the company; hence the locus of motivation was internal. The company invested in the ordering system to achieve cost savings and to gain competitive advantage by locking in hospitals. Such a motivation can be regarded as economic in nature. The pharmaceutical company that produces therapies to treat patients can be regarded as a socio-political leader. The idea of developing an Internet-based EDI system originated within this company. Hence, the locus of motivation was internal. The company wanted to demonstrate a 'customer caring' image in the industry and wanted to be admired by customers. Such a motivation can be identified as socio-political in nature. On the other hand, the hospital can be described as an active IOS follower. One of its major suppliers at their own initiative developed the ordering system and requested that the hospital adopt the system. Hence, the locus of motivation was external. The hospital wanted to eliminate the time consuming order entry task, and was keen to know the stock status before placing an order. Such a motivation can be regarded as 'economic' in nature. The second pharmaceutical manufacturing company can be regarded as a socio-political follower. The initiative to adopt EDI came from a wholesaler. Thus, the locus of motivation was external. The company adopted EDI primarily to make the wholesaler happy, hence this type of motivation can be classified as socio-political in nature. Upon classifying these four case organisations into four distinct cells of the framework, we now use the case data to examine the propositions stated in Table 2. The extent of support that these propositions have received from the experiences of the case organisations is shown in Table 3.

Motivation Scenarios of IOS Adoption				
Rational Leader	Socio-political leader	Active follower	Socio-political follower	Activities
S	-	NS	-	Evaluates the potential of IOS
S	S	S	S	Prepares IOS implementation plan
S	S	S	-	Integrates IOS with back-end systems
S	-	NS	-	Performs post-implementation assessment of IOS
S	S	S	S	Trains staff on IOS
S	-	NS	-	Introduces changes in business process
S	NS	-	-	Applies pressure on partners
S	S	-	-	Markets IOS concept

Note: S: Supported, NS: Not Supported

Table 3: Summary of findings drawn from case data

The wholesaling company performed technical and economic evaluation before deciding to invest on an electronic ordering system. This observation is consistent with the views of the framework. In contrast, the active IOS followers were expected to assess the potential of IOS because they like to know what and how the benefits will arise from IOS adoption. This proposition however was not found true with regard to the hospital. The electronic ordering system was actually offered free to the hospital by its supplier and there was very little cost involved on the hospital's part. Hence, there was no need to justify the project as the management did not want to know expected return on cost involved. On the matter of an implementation plan, the propositions suggested that all the four types of IOS adopters are likely to prepare a plan. These propositions were found to be supported by the experiences of the case companies. The wholesaling company formed a committee that prepared a project plan that contained a timetable for development and testing the system, and a budget. The pharmaceutical manufacturing company was also found to have a specific plan around EDI implementation. A project team was formed to implement the EDI system. However, a very informal project plan was in place in the hospital to introduce electronic

ordering system. The hospital consulted the supplier and determined the hardware and software requirements and in consultation with the supplier it went ahead with the implementation of the system. Likewise, second pharmaceutical manufacturing company also developed a project proposal in which it outlined a budget and timeframe to implement the EDI system.

The propositions indicated that rational leaders, socio-political leaders, and active followers will integrate IOS with their back-end systems. These arguments were also found to be consistent with the experiences of the case organisations. The electronic ordering system in the wholesaling company was initially linked to the company's in-house developed back-end system. After introducing the ERP system, the company established an interface with the ordering system. While the manufacturing company also built an interface between its EDI system and its ERP system. The hospital also established an interface for order transfer between its pharmacy (Stocca) system and electronic ordering system.

Concerning post implementation assessment of IOS, the framework suggested that rational leaders and active followers would perform such an evaluation. In the wholesaling company, an evaluation of the electronic ordering system was performed several years after it was implemented. The company actually identified those features that its customers still wanted to use. The company however did not evaluate any savings caused by the system because the benefits were very obvious. The hospital however did not perform any evaluation of the electronic ordering system upon its implementation, as it did not have any cost involvement, and it did not feel it was necessary to quantify any savings in order to demonstrate that the system was successful. The framework further suggests that IOS leaders and IOS followers alike will recognise the significance of training their staff to use IOS. The wholesaling company trained its IT people in ERP implementation, and that training facilitated them to establish an interface between the electronic ordering system and the ERP system. The manufacturing company trained its IT personnel in ERP and EDI implementation, while the hospital organised training sessions for its staff, who enjoyed learning the system because it offered them greater control over the ordering process. While the IT people in the other manufacturing company did not require any special training, they had the requisite skill and know-how to implement the standalone EDI system. However, training was provided to the customer services people on how to use the system.

The framework indicated that rational leaders and active followers would introduce changes in their business processes in conjunction with IOS adoption. The case data reveals that the wholesaling company made some changes in its ordering process and introduced JIT with a hospital. In the hospital, some minor changes in order processing were incorporated to facilitate automatic transmission of receipt of orders without much intervention from data entry personnel. However, no real changes were incorporated in their business processes. The framework indicated that only socio-political leaders are likely to apply pressure on their partners to force them to embrace IOS solutions. The manufacturing company however did not rely on any coercive means to promote its internet-based EDI solution. The framework predicted that both rational and socio-political leaders would promote their IOS solutions aggressively. The cost of development, maintenance and upgrades of electronic ordering system as well as training of end users were all borne by the wholesaling company. The manufacturing company also offered the EDI system free to the customers and it also sponsored the third party network service provided for maintaining exchange gateway and paid their costs for interfacing with the customer's computer system. Hence, the propositions with regard to marketing of IOS by leaders are being supported.

In summary, a majority of the propositions drawn from the IOS motivation framework were supported based on the experiences of the case organisations. In particular, the propositions with regard to the rational leader and socio-political follower were fully supported. However, propositions concerning the evaluation of the potential of IOS, post-implementation assessment of IOS, and changes made in the system with regard to active follower were not supported. In addition, proposition concerning the application of pressure on trading partners with regard to socio-political leader was not supported. The lack of support for these propositions have however been explained in terms of the situation-specific factors.

CONCLUSION

In this paper, we have highlighted the importance of studying motivations of organisations adopting IOS. We have also suggested that the activities initiated by organisations to introduce IOS are contingent upon how the motivations to adopt IOS develop. To this end, a framework on IOS motivation was developed and a set of propositions were identified, and tested using data obtained from four organisations. The results show that the organisations adopted IOS for different motivations and thus support the credibility of the IOS motivation framework. Additionally, a majority of the propositions were also found to be supported. Some propositions however were not substantiated, and the lack of support was explained in terms of the situation-specific factors. We suggest that these results are useful to IS practitioners and researchers alike. IS managers of those organisations that intend to adopt IOS could define their own motivations and may learn how their activities could be influenced by their type and locus of motivations. We hope that by analysing motivations and activities associated with IOS adoption, this study helps to reduce uncertainty associated with IOS adoption. For researchers, this study provides a new means of understanding different IOS adoption outcomes. This study is not without limitations. We acknowledge that there may exist further variables that may influence adoption decisions and outcomes of IOS adoptions. However, it is not possible to control variables in a case study setting. The effects of many different variables affecting IOS adoption are well reported in the literature. Another limitation of this study is the difficulty to generalise findings as this study is based on only four case organisations. Hence, the results of this study should be interpreted with caution. We are currently undertaking more case studies to perform literal replications and we acknowledge that the outcomes of the propositions may be different once literal replications are completed. Hence, an attempt will be made to provide a rival explanation of the propositions.

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